



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------|------------------|
| 10/560,075 | 12/09/2005 | Gang Zheng | 1694.0580004/JMC/CMB | 9659 |
| 26111 7590 06/21/2010 STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C. 1100 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005 | | | | |
| EXAMINER | | | | |
| BLAND, LAYLA D | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 1623 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 06/21/2010 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,075

Applicant(s)

ZHENG ET AL.

Examiner

LAYLA BLAND

Art Unit

1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/20/2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date: _____

DETAILED ACTION

This office action is in response to Applicant's amendment submitted April 20, 2010.

Claims 1, 2, and 25 are pending and are examined on the merits herein.

In view of Applicant's remarks submitted April 20, 2010, the rejection of claims 1, 2, and 25 under 35 U.S.C. 103(a) as being unpatentable over Pandey in view of Tidmarsh and Fukuzumi is withdrawn. Applicant's arguments are persuasive.

Search and examination has been extended to the full scope of the claims.

Priority

As set forth in the office action mailed May 7, 2009, the filing date of claims 1, 2, and 25 is deemed to be the instant filing date, June 9, 2004.

The following is a new rejection:

Claim Rejections - 35 USC § 102

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Li et al. (SPIE Photonic West Meeting, January 27, 2004, PTO-1449 submitted November 7, 2007). As set forth above, the filing date of the instant claims is June 9, 2004.

Li teaches NIR664-2DG, which anticipates the instant claims when D is NIR664 and L is -NH- [page 3, Figure 1]. A composition comprising the compound at a concentration of 1 μ M was administered to mice [page 3, first full paragraph].

It is noted that the PTO-1449 submitted November 7, 2007 gives the publication date of the Li reference as January 27, 2004, but the date stamped on the reference is December 29, 2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

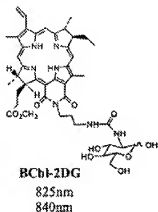
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, and 25 are rejected under 35 U.S.C. 103(a) as being obvious over Li et al. (SPIE Photonic West Meeting, January 27, 2004, PTO-1449 submitted November

Art Unit: 1623

7, 2007) in view of Fukuzumi et al. (J. Phys. Chem. A 2002, 106, 5105-5113, of record) and Patani et al. (Chem Rev. 1996, 96, 3147-3176).

Li teaches the following compound [Figure 1]:



Li's compound differs from the claimed compound BChlPP because Li's compound has an isocyanate linker instead of an isothiocyanate linker and Li's compound contains a vinyl group instead of C(O)Me.

Fukuzumi teaches that bacteriochlorin compounds are useful in photodynamic therapy due to long-wavelength absorption [see abstract and page 5108, Chart 1], and Fukuzumi's compounds have either the vinyl group of the C(O)Me group. Both compounds exhibit long-wavelength absorption [page 5108, Results and Discussion]. It is noted that Fukuzumi's compound is shown with different stereochemistry than the claimed compound, as mentioned by Applicant. However, the stereochemistry illustrated by Fukuzumi appears to be in error. It is known in the art that bacteriochlorins are derived from *R. Sphaeroides* – this is noted in the instant specification [0009]. Fukuzumi's compounds are also derived from *R. spheroids* [page 5106, Synthesis of bacteriochlorins]. The stereochemistry noted by Applicant is derived

from the natural product, and is not installed synthetically. Thus, the stereochemistry of bacteriochlorins should be the same, and Fukuzumi simply contains an error.

Patani teaches that C=O and C=S are bioisosteres [page 3155, Divalent Isosteres]. Bioisosteric replacement in drug design is prevalent and is used for the rational modification of lead compounds into safer and more clinically effective agents [page 3147, Introduction].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to prepare the claimed conjugate BChIPP. Li teaches a 2-deoxyglucose conjugate of a similar bacteriochlorin compound. Li's bacteriochlorin differs from the claimed compound at the position bearing the vinyl group, as set forth above. However, Fukuzumi teaches several bacteriochlorin species, including those which contain the vinyl moiety or the C(O)Me, and each are useful in photodynamic therapy due to their long-wavelength absorption. The skilled artisan would substitute one for the other because they have similar structures, similar properties, and the same utility. Li's compound has an isocyanate group instead of an isothiocyanate group. However, C=O and C=S are known bioisosteric replacements, as taught by Patani. The skilled artisan would substitute C=O/C=S in expectation of preparing a safer or more clinically effective agent, as taught by Patani.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Layla Bland/
Examiner, Art Unit 1623